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MORE WATER FOR GREATER WASHINGTON[1]

The population of the District of Columbia began to spread over the District boundaries a good many years ago. About four years ago the suburban development in Maryland adjoining the District had so grown that the Washington Suburban Sanitary Commission was created by the Maryland legislature to provide water supply and sewerage facilities for a considerable population which is a part of that of the District of Columbia except for government and public works purposes. When the Commission was organized it was believed that water could be bought from the District of Columbia for the larger part of this suburban population, but the very rapid increase in the population of the District has not only made this impracticable at present but has begun even to tax the capacity of the District works for the needs of Washington itself. It was soon evident, therefore, that while the Commission should relieve the conditions existing in certain suburban communities by building at once a temporary filtration plant of 1,500,000 gallons capacity near Hyattsville, it was desirable to ascertain if it were practicable to build works capable of supplying both the District and the suburban territory about it for a long period to come at a reasonable expense.

It has long been recognized that any further development of the present District supply from the Potomac River will be costly. Some years ago Allen Hazen pointed out that it might be advisable to obtain an additional supply from the watershed of the Patuxent River, northeast of the city, and an investigation of the proposition was made under the direction of Colonel Langfitt. The author's investigations have indicated that the additional water supply needed for the thickly settled and rapidly growing parts of Maryland adjoining the northern and northwestern boundaries of the District of Columbia can probably be obtained from the Patuxent or nearby watersheds, which lie wholly in the State of Maryland, more advantageously than elsewhere. As it is manifestly desirable to have the watersheds developed so as to furnish water as needed to the whole Washington metropolitan district, the author has made a study of possible methods of providing such a joint interstate supply.

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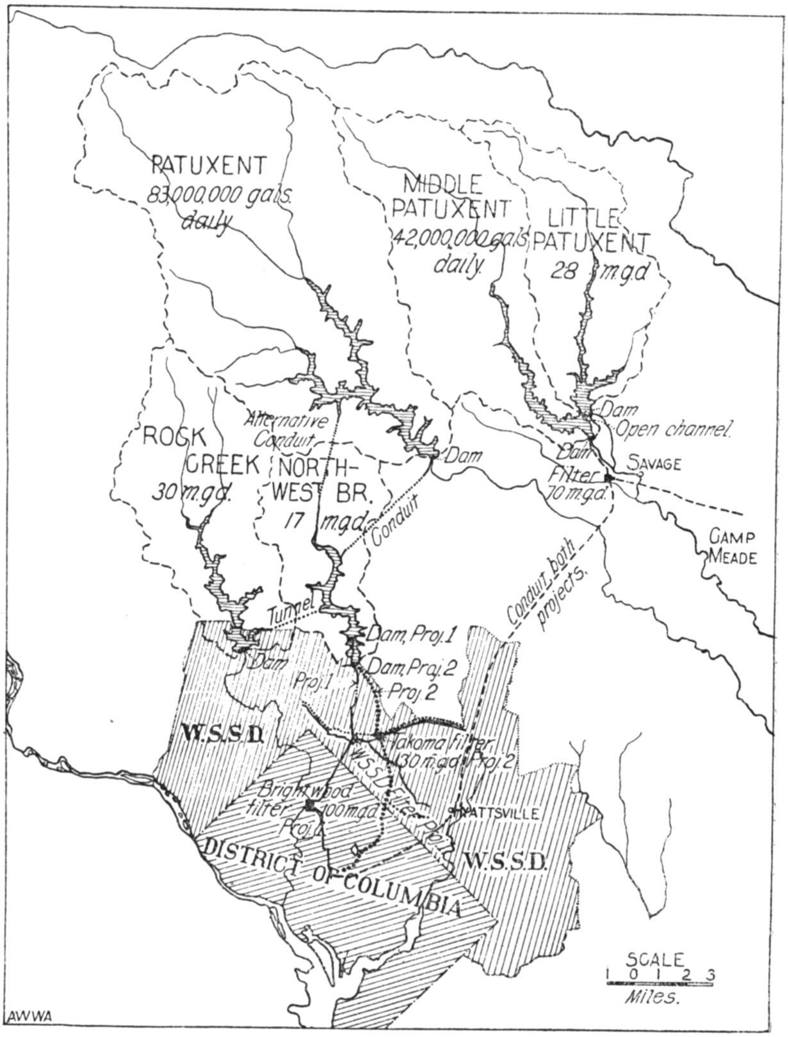
[1] Review by the Editor of a report by Robert B. Morse, Chief Engineer of the Washington Suburban Sanitary District, and Chief Engineer of the Maryland State Board of Health.



Map of Watersheds Which Can be Utilized in Obtaining a Supply for Greater Washington

The Patuxent, Middle Patuxent and Little Patuxent watersheds under consideration are shown on the accompanying map. They are sparsely populated and any large increase in their population is improbable. Sources of pollution of the water can be controlled easily, and the water is superior, in softness, appearance and in sanitary quality, to that of the Potomac whence the District supply is drawn. The quality of the water will be further improved by storage in impounding reservoirs of the size needed to furnish a metropolitan supply. The development of these sources offers to the District of Columbia the advantage of an entirely new and independent system of works, so that any accident to the old Washington aqueduct will not leave the national capital without water, a possibility that caused anxiety during the World War. It has also been ascertained that a gravity supply can be furnished in this way to a part of the District of Columbia to which water must now be pumped.

In view of the conditions in both the District of Columbia and the Washington Suburban Sanitary District it is desirable to develop an additional supply as soon as possible, and time needed for construction is, therefore, an important feature of any project. There are two of these projects for an additional water supply which are much better in this respect than the others that have been suggested. The first of these contemplates the immediate development of a supply of 83,000,000 gallons daily from the Patuxent River and 17,000,000 gallons from Northwest Branch. As more water is needed the Middle Patuxent River can be developed to furnish 42,000,000 gallons daily and 28,000,000 gallons can be obtained from the Little Patuxent.

The Patuxent River reservoir can be developed to store 23,500-000,000 gallons by constructing an 80-foot dam. With the spillway at El. 350 and by drawing water down to El. 318, there will be a useful storage of 18,500,000,000 gallons. The water would flow through a conduit about 25,000 feet long, mostly in tunnel, to a reservoir on Northwest Branch. This conduit would have a capacity of about 108,000,000 gallons per day with extreme low water in the Patuxent River reservoir. The Northwest Branch reservoir formed by a dam about 70 feet high, would have a capacity of 6,500,000,000 gallons, of which about 3,500,000,000 gallons would be available for distribution. The spillway is at El. 310 and the reservoir can be drawn down to El. 295. The water would be taken from it through a conduit of a capacity of 140,000,000 gallons daily to a 100,000,000-gallon filtration plant near the present Brightwood reservoir of the District of Columbia water works.

The later developments under this first project would be the construction of a 15,500,000,000-gallon reservoir on the Middle Patuxent River by means of a 105-foot dam. About 11,500,000,000 gallons of the total stored water would be available for use. The Little Patuxent River reservoir would be formed by a 55-foot dam and hold about 6,000,000,000 gallons, of which 5,800,000,000 gallons could be utilized. This last reservoir will have no spillway and will be connected with the Middle Patuxent reservoir by a short open channel. In extreme dry weather the Middle Patuxent reservoir can be drawn down to El. 277 and the Little Patuxent reservoir to El. 280.

The water from these reservoirs would be taken through a conduit of 100,000,000 gallons daily capacity, 8500 feet long, to a 70,000,000 gallon filtration plant near Savage. A 100,000,000-gallon conduit, about 102,000 feet long, would deliver the filtered water to the District of Columbia distribution system, and by constructing a pumping station near Savage water can be supplied to the district about that place and to Camp Meade.

The second project which is attractive from the viewpoint of the time saved in its execution comprises the immediate development of 83,000,000 gallons per day from the Patuxent River and a conduit to Northwest Branch, as in the first project. Northwest Branch would be developed to yield 17,000,000 gallons daily by building a 70-foot dam, at a point about one mile downstream from that under the first project, and forming a reservoir of 4,000,000,000 gallons capacity, of which 3,300,000,000 gallons would be available above El. 260, the minimum useful level in this basin. The spillway would be about El. 290. The water of Northwest Branch would be supplemented by that delivered through an 11,500-foot conduit, furnishing about 36,000,000 gallons daily from Rock Creek reservoir. This last reservoir would be formed by a 73-foot dam and would hold about 13,500,000,000 gallons, of which 7,500,000,000 gallons would be available above El. 275, the lowest useful level. The spillway would be at El. 293. The water would be taken from Northwest Branch reservoir through a 14,500-foot conduit with a daily capacity of about 175,000,000 gallons to a 130,000,000-gallon filtration plant near Takoma Park. The water would be delivered to the District of Columbia distribution system near the present main pumping station. The later development under this project would be the same as under the first project.

While either one of these projects cannot furnish water from the Patuxent basins in less than five or six years, it should be possible to supply 17,000,000 gallons daily from Northwest Branch in not over three years. If work on the Patuxent River dam and the tunnel between the Patuxent River and Northwest Branch reservoir were carried on simultaneously with the development of Northwest Branch, or if similar work for developing Rock Creek were so carried on, much time in completing either project would be saved. As soon as the first part of one of these projects is finished so that the entire Washington metropolitan district can be supplied by it, the suspension of the present Potomac River works is recommended, keeping them in condition for use as a reserve in case of emergency. As there is a fall of about 140 feet between the present aqueduct near Georgetown reservoir and the Potomac River, the aqueduct might be utilized to furnish water for a hydro-electric plant in the District of Columbia.

The second project will furnish more water than the first, but the latter gives higher pressures and the filtration plant would be located on property of the District of Columbia. If the first project is adopted the Washington Suburban Sanitary District must build its own filtration plant near Takoma Park. Either project is capable of several modifications. No attempt has been made to prepare estimates of the cost of these works, for the purpose of the investigation has been solely to discover feasible methods of supplying the entire Washington metropolitan area with more water from a single system of works at the earliest possible date.